

S06-198
Amendment dated 04/02/2010

10/599,084

02940350aa
Reply to office action mailed 02/02/2010

The following is a complete listing of all claims in the application, with an indication of the status of each:

Listing of claims:

- 1 1. (currently amended) A method for reducing motion artifacts and patient
2 dose in radiological imaging using four dimensional computed tomography
3 (4D CT), comprising the steps of:
4 identifying a pattern in an average cycle of an anatomy being imaged,
5 said pattern being responsive to a ~~reproducible~~ reproducible periodic motion
6 of said anatomy learned through training of the patient;
7 establishing spatial and temporal tolerances around said pattern, said
8 tolerances being based on data of said periodic motion learned through
9 training of the patient and forming an envelope around said pattern balancing
10 an acquisition time against a quality of an acquired 4D CT image;
11 measuring a periodic motion of said anatomy so as to detect when said
12 periodic motion is outside said tolerances;
13 controlling a 4D CT scan of said anatomy so as to pause the scan
14 during periods having said detected out of tolerance condition.

- 1 2. (original) A method as in claim 1, wherein said anatomy is a lung and said
2 measuring step uses a respiratory signal.

- 1 3. (canceled).

- 1 4. (previously presented) The method of claim 2, wherein said controlling
2 step further includes the steps of:
3 acquiring a respiratory signal during said 4D CT scan;

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4 applying said envelope to said respiratory signal; and
5 adapting said 4D CT scan to said respiratory signal by excluding from
6 said 4D CT scan data acquired when said respiratory signal is not within said
7 envelope.

1 5. (original) The method of claim 4, wherein data acquired during irregular
2 respiratory cycles is excluded by pausing said 4D CT scan data acquisition
3 when said respiratory signal is not within said envelope.

1 6. (currently amended) A system for reducing motion artifacts and patient
2 dose in radiological imaging using four dimensional computed tomography
3 (4D CT), comprising:

4 means for identifying a pattern in an average cycle of an anatomy
5 being imaged, said pattern being responsive to a ~~reproducible~~ reproducible
6 periodic motion of said anatomy learned through training of the patient;

7 means for establishing spatial and temporal tolerances around said
8 pattern, said tolerances being based on data of said periodic motion learned
9 through training of the patient and forming an envelope around said pattern
10 balancing an acquisition time against a quality of an acquired 4D CT image;

11 means for measuring a periodic motion of said anatomy so as to detect
12 when said periodic motion is outside said tolerances;

13 means for controlling a 4D CT scan of said anatomy so as to pause the
14 scan during periods having said detected out of tolerance condition.

1 7. (original) A system as in claim 6, wherein said anatomy is a lung and said
2 measuring means uses a respiratory signal.

1 8. (canceled).

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1 9. (previously presented) The system of claim 7, wherein said controlling
2 step further comprises:
3 means for acquiring a respiratory signal during said 4D CT scan;
4 means for applying said envelope to said respiratory signal; and
5 means for adapting said 4D CT scan to said respiratory signal by
6 excluding from said 4D CT scan data acquired when said respiratory signal is
7 not within said envelope.

1 10. (previously presented) The system of claim 9, wherein said adapting
2 means provides that data acquired during irregular respiratory cycles is
3 excluded by pausing said 4D CT scan data acquisition when said respiratory
4 signal is not within said envelope.

1 11. (currently amended) A method for reducing motion artifacts in
2 radiological imaging using four dimensional computed tomography (4D CT),
3 comprising the steps of:
4 identifying a pattern in an average cycle of an anatomy being imaged,
5 said pattern being responsive to a ~~reproducible~~ reproducible periodic motion
6 of said anatomy learned through training of the patient;
7 establishing spatial and temporal tolerances around said pattern, said
8 tolerances being based on data of said periodic motion learned through
9 training of the patient and forming an envelope around said pattern balancing
10 an acquisition time against a quality of an acquired 4D CT image;
11 measuring a periodic motion of said anatomy so as to detect when said
12 periodic motion is outside said tolerances;
13 controlling post-processing of a 4D CT scan of said anatomy so as to
14 omit data acquired during periods having said detected out of tolerance
15 condition.

1 12. (original) A method as in claim 11, wherein said anatomy is a lung and
2 said measuring step uses a respiratory signal.

1 13. (canceled).

1 14. (previously presented) The method of claim 12, wherein said controlling
2 step further includes the steps of:
3 acquiring a respiratory signal during said 4D CT scan;
4 applying said envelope to said respiratory signal; and
5 adapting said 4D CT scan to said respiratory signal by excluding
6 during said post-processing of said 4D CT scan data acquired when said
7 respiratory signal is not within said envelope.

1 15. (original) The method of claim 14, wherein data acquired during
2 irregular respiratory cycles is excluded by omitting data acquired during said
3 4D CT scan when said respiratory signal was not within said envelope.